

CLAIMS

What is claimed is:

1. A user interface to manage electronic messages, comprising:
a display providing one or more display objects associated with delivery of one or more messages, the messages being automatically classified according to a respective priority value; and
one or more inputs associated with the display objects to facilitate adaptation of the user interface to one or more preferences of a user.
2. The system of claim 1, the one or more display objects including one or more profiles that relate to a time and manner of delivery of the one or more messages.
3. The system of claim 2, the one or more profiles relating to an active profile and a default profile configurable by the user.
4. The system of claim 2, the one or more profiles are associated with one or more delivery options for sending the messages to a device.
5. The system of claim 4, the one or more delivery options including at least one of send messages to a mobile device, send messages from a folder associated with the mobile device, enable prioritized delivery.
6. The system of claim 4, the delivery options including chunking options, the chunking options comprise at least one of holding and delivering messages until a predetermined time specified by the user, holding and delivering messages until a predetermined number of messages have accumulated, and holding and delivering messages based upon a predetermined inactivity of a computer.

7. The system of claim 2, the one or more profiles have an associated priority setting such that messages are transmitted based upon a threshold configurable by the user.
8. The system of claim 7, the priority setting associated with a display object having a slider to adjust the threshold, the threshold having a range from high priority messages sent to all messages sent to a mobile device.
9. The system of claim 2, the one or more profiles including at least one of a calendar and time setting associated with the one or more display objects.
10. The system of claim 2, the one or more profiles are associated with at least one of work, home, out of office and do not disturb.
11. The system of claim 1, the one or more display objects including status information associated with an amount of learning that has been achieved by a priorities system.
12. The system of claim 1, the one or more display objects selectable to send a summary of information to a device associated with the one or more messages.
13. The system of claim 1, the one or more display objects including a reset of the amount of messages sent to the device.
14. The system of claim 1, the one or more display objects comprising one or more rules configurable by the user to effect delivery of the messages to a device, the one or more rules including selection options of at least one of sending messages based on importance, sending messages based on the user's name and a TO field, sending messages based on the user's name and a CC field, and sending messages based on a source of the message.

15. The system of claim 1, further comprising providing feedback to the user *via* the one or more display objects regarding learning associated with a priorities system.
16. The system of claim 15, the feedback includes information relating to learning when messages are deleted by the user.
17. The system of claim 15, the feedback includes information relating to where messages are learned from.
18. The system of claim 15, further comprising at least one of back-up, restore, and reset options regarding the learning.
19. The system of claim 1, further comprising one or more device options relating to how messages are displayed on a device.
20. The system of claim 19, the one or more device options further comprising a selectable compression setting to control the amount of information displayed.
21. The system of claim 19, the one or more device options further comprising limiting a number of messages sent, limiting the number of characters in the messages, and automatically resetting the number of messages sent.
22. The system of claim 19, the one or more device options further comprising configuring display information relating to a sender of the messages.

23. A method associated with message delivery, comprising:
generating a priority associated with a message;
determining an expected loss of non-review of the message at a current time based on the priority;
determining an expected cost of outputting the message at the current time; and
alerting a user of the message in response to determining that the expected loss is greater than the expected cost.
24. The method of claim 23, the expected loss of non-review comprises determining a likelihood that the user will review message text at a future time.
25. The method of claim 23, the expected loss of non-review comprises determining a current expected rate of lost opportunity for the user resulting from non-review of the message as a function of time.
26. The method of claim 23, wherein the priority is generated by a classifier configured as at least one of a Bayesian classifier and a support-vector machine classifier.
27. The method of claim 23, further comprising providing a current profile selected from one of a plurality of profiles, at least a portion of the plurality of profiles editable by the user to reflect a different context.
28. The method of claim 27, the plurality of profiles is schedulable on a per-day and by-time basis.
29. The method of claim 28, the plurality of profiles provides a chunk setting such that the message is delivered to a communications modality in conjunction with one or more other messages.

30. The method of claim 28, the plurality of profiles provides a chunk setting such that the message is delivered to a communications modality when a specified period has expired.

31. The method of claim 23, further comprising, prior to alerting the user, formatting the message.

32. The method of claim 31, the formatting comprises compressing the message.

33. The method of claim 31, the formatting comprises fragmenting the message.

34. The method of claim 23, further comprising determining an expected criticality for the prioritized messages.

35. The method of claim 34, wherein the expected criticality (EC) is expressed as:

$$EC = \sum_i C^d(H_i) p(H_i | E^d)$$

wherein C is a cost function that relates to a cost rate at which cost is accrued, d is a delay, E is an event, and H is a criticality class.

36. The method of claim 34, wherein the expected criticality is expressed as a function of time.

37. The method of claim 36, an expected loss is expressed as at least one of:

$$EL = \sum_i^n p(\text{critical}_i) C(\text{critical}_i) t; \text{ and}$$

$$EL = \int_0^t p(\text{critical}_i) C(\text{critical}_i, t) dt$$

wherein EL is an expected loss, $p(\text{critical}_i)$ is a probability that a message has criticality i , $C(\text{critical}_i)$ is a cost function for the message having the criticality i , n is a total number of criticality classes minus one, and t is the time delay before reviewing the message.

38. The method of claim 37, the expected loss is expressed as at least one of:

$$EL' = \sum_j p(t_j|E) \sum_i^n p(\text{critical}_i) C(\text{critical}_i) t_j; \text{ and}$$

$$EL' = \sum_j p(t_j|E) \int_0^{t_j} p(\text{critical}_i) C(\text{critical}_i, t) dt$$

wherein EL' is an uncertainty in time of delay, E represents one or more observations about a user state, and i and j are indexes, i and j being integers.

39. The method of claim 38, E is at least one of a calendar, a room acoustic, a desktop activity, a time since last touched an active device.

40. A user interface to manage electronic messages, comprising:
means for providing graphical displays associated with one or more messages that have been automatically classified according to a priority of the respective messages; and
means for configuring the graphical displays according to one or more user preferences associated with the priority and delivery of the one or more messages.
41. A method for delivering messages to a device, comprising:
scheduling a period when one or more user profiles are activated;
configuring at least one set of parameters for the one or more profiles;
assigning priority values to one or more messages; and
delivering the one or more messages based at least in part on the priority values, the profile that is activated, and the at least one set of parameters.
42. The method of claim 41, further comprising assigning at least one of a color and a sound to indicate the priority of the messages.
43. The method of claim 41, further comprising deferring messages until a more convenient time established by the user.
44. The method of claim 41, further comprising providing status information relating to why a message is of a determined priority.
45. The method of claim 41, further comprising observing a previous history of activity and providing feedback as to a message delivery volume based upon the history.
46. The method of claim 41, further comprising employing an information agent to consider restrictions from other parties before delivering the one or more messages.
47. The method of claim 41, further comprising activating one or more rules that operate to influence when messages are sent to a user.

48. The method of claim 47, the one or more rules include an if and then construct such that if an event occurs then a message is automatically assigned a predetermined priority.

49. The method of claim 47, the one or more rules include an if and then construct such that if an event occurs then a priority value of a learning process is disclosed.

50. The method of claim 41, the one or more rules include an if and then construct such that if a message is received from a selected communications channel, then a message is automatically assigned a predetermined priority.

51. The method of claim 41, further comprising automatically reviewing messages by an order determined by the priority value.

52. The method of claim 41, further comprising automatically calling the user if the priority value is above a predetermined threshold.

53. The method of claim 41, further comprising converting audio messages into text.

54. The method of claim 53, further comprising determining a priority for the messages based upon at least one of the pitch, rate, content, and inflection of the messages.

55. A user interface for an adaptive prioritization and routing system, comprising:
one or more controls and displays to at least one of acquire user preferences, inspect behavior, and guide learning and decision policies of the adaptive prioritization and routing system; and

a user interface associated with the one or more controls and displays that facilitates inspection, control and learning associated with alerting and routing prioritized messages.

56. The user interface of claim 55, further comprising a plurality of parameters that are configured in conjunction with various configuration and adjustment options to facilitate personalization of the user interface.

57. The user interface of claim 56, the personalization includes at least one of employing explicit and implicit user feedback relating to how messages are classified and subsequently provided to the user.

58. The user interface of claim 57, the feedback is employed to guide learning and decision policies in the adaptive prioritization and routing system.

59. The user interface of claim 57, the feedback includes dialog that is provided to users to further refine at least one of learning and decision policies in the adaptive prioritization and routing system.

60. The user interface of claim 57, the explicit feedback includes such actions as configuring the user interface to consider a selection of messages as being more important than another selection of messages and altering learning about how decisions are made regarding message urgency.

61. The user interface of claim 57, the implicit feedback includes monitoring various context aspects of the user to determine message importance.

62. The user interface of claim 61, the implicit feedback includes at least one of monitoring sounds, keyboard activities, presence detectors, pauses when reviewing messages, how quickly messages are opened and deleted, and whether messages are saved, copied and forwarded.

63. The user interface of claim 57, the feedback includes directing messages to the user regarding learning decisions such as at least one of “You are about to delete messages that have not yet been employed in the learning process,” and messages relating to how and why messages were classified a certain priority.

64. The user interface of claim 55, further comprising one or more configuration and adjustment options that include at least one of profile options, routing options, alerting options, chunking options, schedule options, and context-sensitive control options.

65. The user interface of claim 64, the chunking options include grouping M messages, M being an integer, the M messages are held as a group before delivery of the messages to the user.

66. The user interface of claim 55, further comprising one or more rules that act in conjunction with a routing system, learning status and configuration options for guiding and inspecting the state of learning of a message urgency system.

67. The user interface of claim 66, the one or more rules including conditions that are applied in at least one of a disjunctive and a conjunctive manner.

68. The user interface of claim 55, further comprising one or more device option configurations for controlling message output to a selected message reception and display device.

69. The user interface of claim 55, further comprising prioritized messages having acoustical properties including at least one of prosodic features, temporal patterns of rate, pitch, inflections, and an overall energy associated with voice messages.

70. The user interface of claim 55, further comprising a priority threshold adjustment that facilitates control of how many messages are sent to a users device.

71. The user interface of claim 70, further comprising an overlay adjustment that limits the number of messages sent to the users device per a given timeframe.

72. The user interface of claim 55, further comprising a threshold adjustment that is employed as a bound on the total dollars allotted for forwarding messages to a user.

73. The user interface of claim 72, the user specifies that a system sends the most urgent messages, but at a certain cost per message by a routing company, adjust the threshold so that it would expect to stay within a certain cost per day.

74. The user interface of claim 55, further comprising one or more deferral policies that are given as bounds such that a message of a particular urgency will not wait more than at least one of a predetermined and dynamically computed upper limit of time.

75. The user interface of claim 74, the policies are at least in part based on a function of the message urgency.

76. The user interface of claim 75, a user specifies at least one of that a message of high urgency should be transmitted with an alert to one or more active devices as soon as possible and to be available for review if the user happens to inspect messages that are waiting.

77. The user interface of claim 76, further comprising a policy that if the user is more than a specified level of non-interruptability and the message has not been observed, then wait a predetermined time before alerting the user.

78. A user interface for an adaptive prioritization and routing system, comprising:
 one or more controls and displays to acquire message priority settings associated with the adaptive prioritization and routing system; and
 a user interface associated with the one or more controls and displays that provides at least one of an adjustable control of an amount of messages received *via* the message priority settings and a feedback directed to the user relating to the settings.

79. The user interface of claim 78, the feedback includes at least one of a quantity of alerts and messages that would have been transmitted to the user per at least one of a time and within a specified bound in time.

80. The user interface of claim 79, further comprising monitoring user actions for each of several different routing parameters based upon a threshold on importance required to send a message beyond the parameters that were employed.

81. The user interface of claim 79, further comprising a user display including at least one of what would have happened had the settings been changed, and a display for a set of thresholds along a continual scale thresholds.

82. The user interface of claim 81, the feedback further comprising previously tracked numbers of messages that would have been received at different simulated values of the threshold.

83. The user interface of claim 82, further comprising providing feedback over at least one of a day, week, and month that is displayed at respective settings so as to be reviewed by users as guides to roughly predict future behavior of the adaptive prioritization and routing system for potential settings of the threshold.

84. The user interface of claim 82, further comprising employing recent history as a predictor of the future.

85. The user interface of claim 82, further comprising advanced simulations that are employed to perform “what-if” analyses for at least one of different settings, parameters and policies, such that new settings can be based on an expected number of alerts per given timeframe at different settings.